

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-6 are presently active in this case; Claims 7-21 having been withdrawn from consideration, and Claim 1 having been presently amended.

In the outstanding Official Action, Claims 1-3 and 5-6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fang et al (U.S. Pat. No. 6,023,085), Reisinger (U.S. Pat. No. 6,137,718), Pradeep et al (U.S. Pat. No. 6,228,713), and Jang et al (U.S. Pat. No. 5,786,262). Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Fang et al, Reisinger, Pradeep et al, and Jang et al, and further in view of Agarwal et al (U.S. Pat. No. 6,201,276).

Presently Claim 1 defines:

(a) the first transistor (cell transistor) and second transistor (selection transistor) are formed in the same well;

(b) the second gate insulating film of the second transistor has a bottom gate insulating film and a top gate insulating film, and both of the bottom and top gate insulating films allow electric charge to pass into/from the charge storage layer;

(c) a height of the second gate insulating film in the second transistor is lower than a height of the insulating film, and likewise a height of the first gate insulating film in the first transistor is lower than a height of the insulating film; and

(d) a height of the second gate insulating film is lower than a height of the first gate insulating film having the bottom and top gate insulating films.

Applicant respectfully submits that none of the cited references individually or when combined shows all the above features as set forth in present Claim 1.

Fang shows in Fig. 9H a cell transistor 346 having a tunnel oxide 308, a floating gate 316, an interpoly dielectric layer 322 and a gate 338, and a select gate transistor 344 having a gate oxide 336 and a gate 338. However, *only the tunnel oxide* 308 allows electric charge to pass into/from the floating gate 316 during writing/erasing, and the interpoly dielectric layer 322 formed on the floating gate 316 *does not allow* electric charge to pass through. Therefore, in Fang, a height of the gate oxide 336 of the select gate transistor 344 is not lower than a height of an insulating film of the cell transistor to allow electric charge to pass through (that is to say, only the tunnel oxide 308 allows electric charge to pass through).

In Claim 1 as noted in feature (b) above, the first gate insulating film of the first transistor (a cell transistor) has a bottom gate insulating film and a top gate insulating film, and both of the bottom and top gate insulating films allow electric charge to pass into/from the charge storage layer.¹ Accordingly, in Claim 1 as noted in feature (d) above, a height of the second gate insulating film (i.e., in the selection transistor) is lower than a height of the first gate insulating film (i.e., in the cell transistor) having the bottom and top gate insulating films, such that both of the second gate insulating film and the first gated insulating film allow electric charge to pass through.

Since Fang as shown above only allows the tunnel oxide to pass electric charge into/from the floating gate 316, the above-noted features (b) and (d) are not disclosed in Fang.

Furthermore, the feature (c) is not shown in Fang, as the Office Action acknowledges on page 3, lines 5-8.

The Office Action asserts at page 3, lines 9-13, that Reisinger teaches to form an ONO gate insulating layer 5 with a silicon nitride layer 52 as a charge storage layer, and that the

¹ By the Fowler-Nordheim tunneling phenomenon, electric charge passes through the bottom or top gate insulating films.

thickness of the bottom oxide layer 51 is smaller than the top oxide layer 53. However, Applicant submits that Reisinger does not show any of the above-noted features (a) to (d).

The Office Action asserts at page 3, lines 19-23, that Pradeep teaches to insulate memory cells with trench isolations 24 with the charge storage layer 14. However, Applicant submits that, regardless of these teachings, Pradeep discloses none of the features (a) to (d).

Furthermore, the Office Action at page 4, lines 3-4, asserts that Jang teaches to form a bottom insulating layer in a trench's inner surface 10 to provide better isolation. However, Applicant submits that, regardless of these teachings, none of the features (a) to (d) is shown in Jang.

Agarwal is cited in the Office Action for its teaching about strontium titanate and barium strontium titanate films. As such, Agarwal does not teach the above features (a) to (d).

Accordingly, none of the applied references discloses the features set forth in presently amended Claim 1. Therefore, Claims 1-6 are believed to patentably define over the applied references and should be allowed.

Finally, this amendment is submitted in accordance with 37 C.F.R. §1.116 which after final rejection permits entering of amendments canceling claims, complying with any requirement of form expressly set forth in a previous Office Action, presenting rejected claims in better form for consideration on appeal, or presenting amendments touching on the merits upon a showing of good and sufficient reasons why the amendment is necessary and was not presented earlier. The present amendment amends the claims to present the claims in better form for consideration on appeal. Further, such amendments are made in light of the new position taken in the Office Action on page 5, lines 3-4, that Reisinger and design choice meet the claim limitations. Such a position being absent from previous Office Actions made

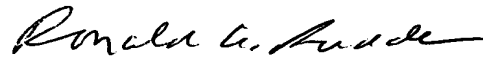
Application No. 09/955,076
Reply to Office Action of January 7, 2005

the present amendments unnecessary until now. No new matter has been added, and this amendment does not raise new issues requiring further consideration and/or search. It is therefore respectfully requested that the present amendment be entered under 37 C.F.R. §1.116.

Consequently, in view of the present amendment and in light of the above discussions, the outstanding grounds for rejection are believed to have been overcome. The application, as amended herewith, is believed to be in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Eckhard H. Kuesters
Registration No. 28,870
Attorney of Record
Ronald A. Rudder, Ph.D.
Registration No. 45,618

CUSTOMER NUMBER
22850

Tel: (703) 413-3000
Fax: (703) 413-2220
EHK:RAR:clh

I:\ATTY\RAR\AMENDMENTS\214019US\AM6.DOC